



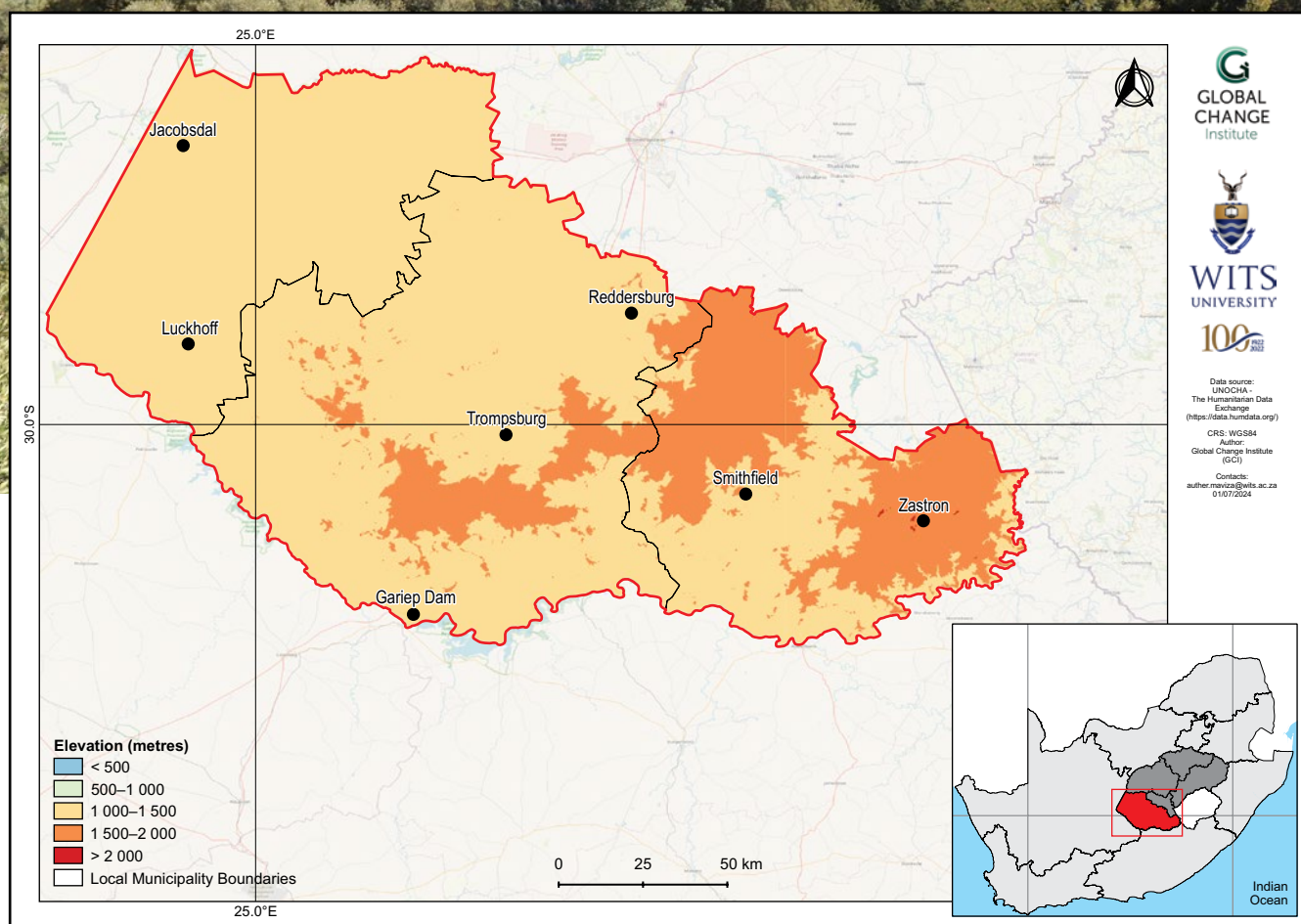
# Xhariep District Municipality climate change fact sheet

**Free State, South Africa**

**MUNICIPAL**

## Introduction

- This fact sheet is part of a series of district municipality fact sheets developed by the Wits GCI and SANBI. The fact sheets present a summary of observed and projected changes in climate over district municipalities in South Africa. They should be used together with the guidelines presented in the cover page.
- Xhariep District Municipality covers an area of approximately 34 250 km<sup>2</sup>, with elevation ranging from 1 200 m above sea level on the western plateau to 1 500 m above sea level along the mountainous regions in the east.
- The district experiences a semi-arid climate in the west, with the eastern parts being substantially wetter. It is characterised by hot, wet summers and cold, dry winters, with occasional frost.

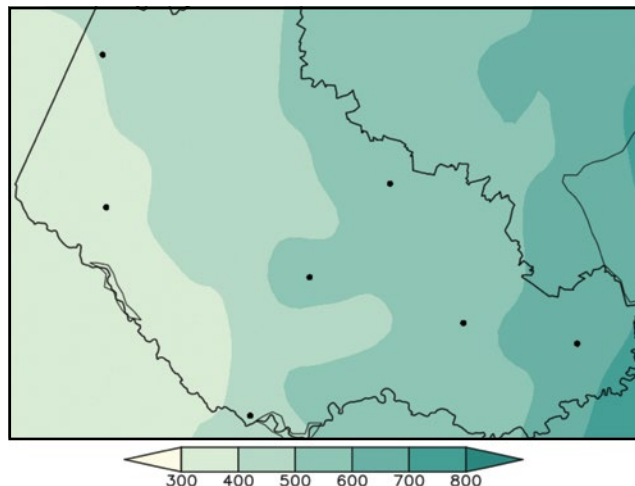


**Flanders**  
State of the Art

## Observed climate: rainfall (1981–2000)

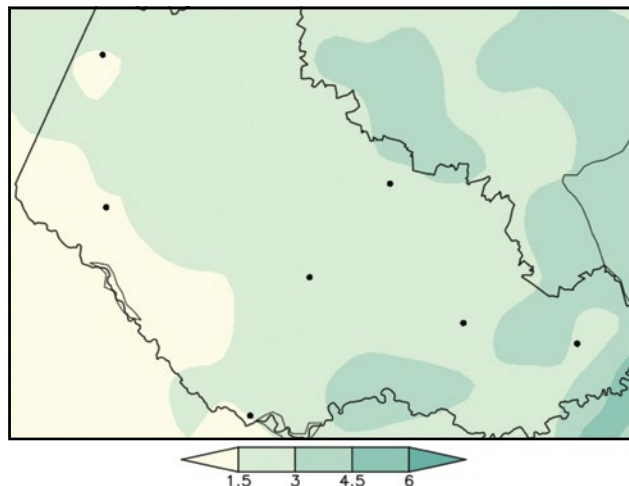
### Mean annual rainfall

Mean annual rainfall ranges from 300 mm over the western plateau, increasing to 700 mm in the eastern parts.



### Extreme rainfall days

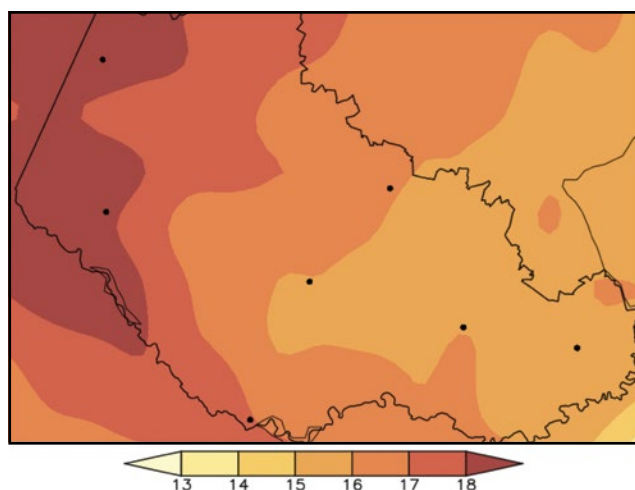
Observed mean annual number of extreme rainfall days range from less than 1.5 days over the southwestern border parts to 6 days over the southeastern parts.



## Observed climate: temperature (1981–2000)

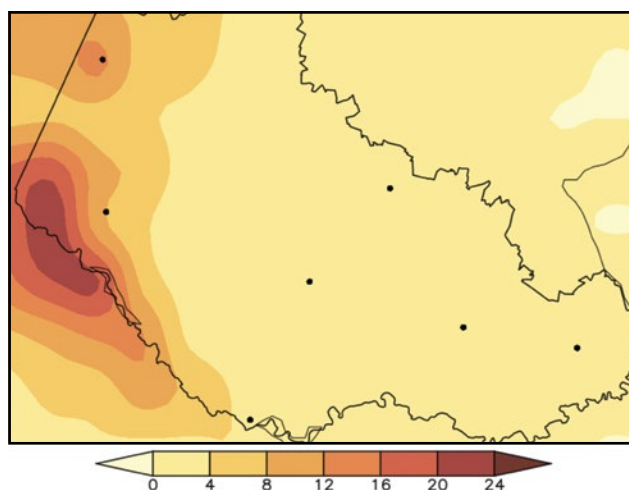
### Mean annual temperature

Mean annual temperature ranges from 14 °C over most of the southeastern highlands to 18 °C in the western region.



### Very hot days

Observed mean annual number of very hot days range from less than 4 days over the greater eastern and central parts to 24 days over the southwestern parts.

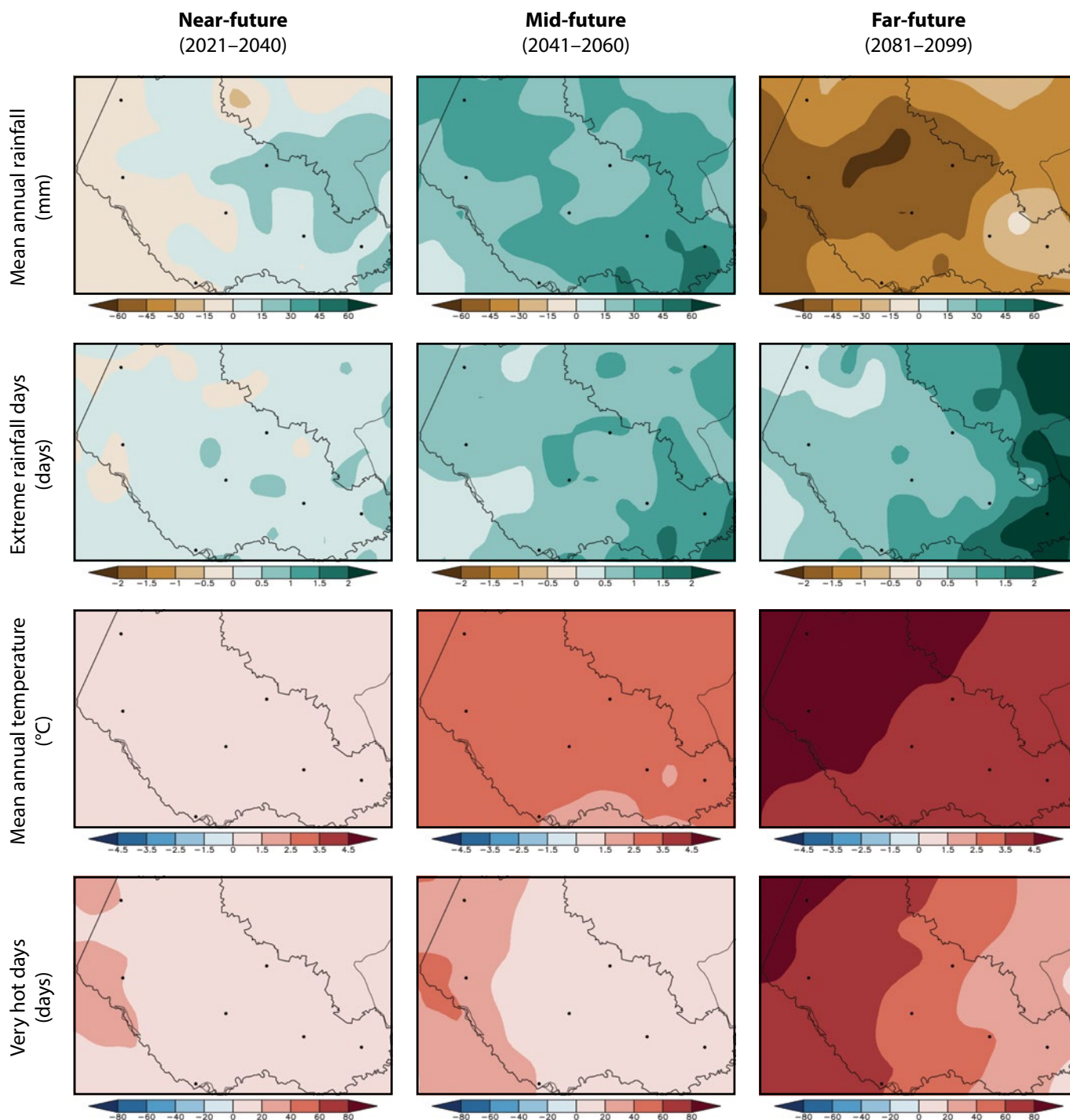


## Observed climate trends (overview)

- Observed decrease in mean annual rainfall (*low confidence*).
- Observed increase in the frequency of extreme rainfall events (*high confidence*).
- Observed increase in mean annual temperature and warm extremes (*virtually certain*); decrease in cold extremes (*high confidence*).
- Observed increases in meteorological and agricultural drought (*low confidence*).

## Projected future climate change (overview)

- Projected changes in mean annual rainfall are *uncertain* in the near- and mid-future, but there is *high confidence* in decreases in the far-future.
- Projected increase in the frequency of extreme rainfall events (*high confidence*).
- Projected increase in mean annual temperature and warm extremes (*virtually certain*); decrease in cold extremes (*high confidence*).
- Projected increase in agricultural and meteorological drought in the far-future (*high confidence*).



## Projected future climate change (detailed)

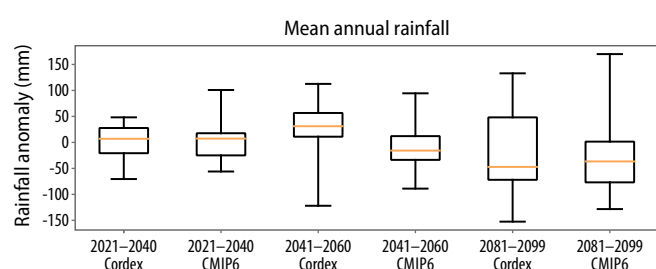
### Near- and mid-future

- Projected changes in rainfall in the near- and mid-future are *uncertain*.
- Projected increase in extreme rainfall events (*likely*).
- Projected increase in temperature and warm extremes (*virtually certain*); decrease in cold extremes (*very likely*).
- Projected increase in agricultural and meteorological drought (*more likely than not*).

### Far-future

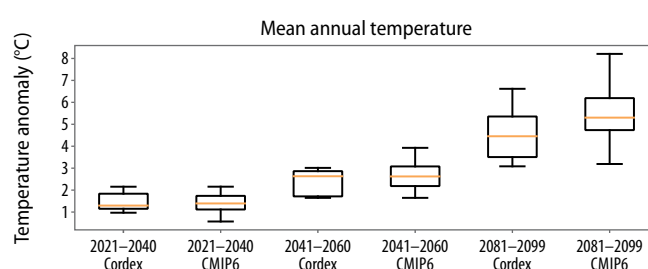
- Projected decrease in rainfall over the entire district (*likely*).
- Projected increase in extreme rainfall events (*likely*), particularly over the mountainous regions.
- Projected increase in temperature and warm extremes (*virtually certain*); decrease in cold extremes (*very likely*).
- Projected increase in agricultural and meteorological drought (*very likely*).

## Climate model projections: model agreement and uncertainties



### Mean annual rainfall

- Averaged across the district, projected rainfall changes for the near- and mid-future are *uncertain*.
- Rainfall decreases are projected in the district in the far-future under low mitigation scenarios (*likely*).
- Partially in response to *virtually certain* temperature increases, agricultural drought is to occur more frequently in the near- to mid-future (*low confidence*) and far-future (*very likely*).



### Mean annual temperature

- Temperature increases averaged across the district are *virtually certain* in the near-future and may be as high as 1.5 °C.
- Under low mitigation, further temperature increases are *virtually certain* and may approach 3.0 °C in the mid-future and 6.0 °C in the far-future.
- Increases in average temperature will be accompanied by increases in warm temperature extremes such as heatwaves and high fire danger days (*likely*).

#### Citation:

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